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Cluster Structure and Three-Body Decay of ^{14}C[1] LISA CARPENTER, C. SANTAMARIA, W. MITTIG, D. BAZIN, National Superconducting Cyclotron Laboratory, Y. AYYAD, Lawrence Berkeley National Laboratory, T. AHN, University of Notre Dame, F.D. BECCHETTI, University of Michigan, S. BECEIRO-NOVO, National Superconducting Cyclotron Laboratory, J. KOLATA, University of Notre Dame, J. RANDHAWA, N. WATWOOD, National Superconducting Cyclotron Laboratory — Recent model calculations with most advanced methods for cluster states have shown the need of experimental data to probe the structure of light exotic nuclei, including those with α-clustering, such as ^{14}C. The prototype Active Target Time Projection Chamber (pAT-TPC) allows us to investigate these types of structures, giving access to the full excitation function with a single beam energy. This type of experiment measures resonances in ^{14}C that can be compared to the models. Additionally, using a Dalitz-type analysis, three-body decays can be analyzed to determine probabilities of "democratic" and "sequential" decay. The measurement was carried out by resonant alpha-scattering of a ^{10}Be beam at 40 MeV delivered by the *TwinSol* facility at the University of Notre Dame. Preliminary results will be presented including event reconstruction using the Random Sample Consensus method.

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